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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
EIICHI NISHIZAWA, ET AL. : EXAMINER: ELHILO, EISA B.  
SERIAL NO: 10/535,185 :  
FILED: MAY 17, 2005 : GROUP ART UNIT: 1751  
FOR: COMPOSITION FOR HAIR :  
BLEACHING OR HAIR DYEING :

DECLARATION UNDER 37 C.F.R §1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Mr. Hajime Miyabe who deposes and states as follows:

1. I am a named inventor of the above-identified application.
2. That I have been employed by Kao Corporation for 14.5 years as a researcher in the field of hair care cosmetics.
3. The following experiments were performed by me or under my direct supervision.
4. Comparative Experiment

The first parts and the second part as shown in Tables 1 and 2 were prepared by conventional methods.

5. Evaluation for dyeing property

The respective first parts and the second part were mixed, each mass ratio of which is 1:1, to obtain hair dye compositions. Each of the hair dye compositions was applied to each bundle of 1 g of the goat hair damaged by bleaching at a composition-hair ratio =1:1 by mass. The bundle was allowed to stand in a

thermostat set at 30°C for 20 minutes, and it was rinsed with water, shampooed, subjected to conditioning treatment, and dried. Color difference  $\Delta E_1$  of each bundle before and after hair dye treatment was measured with a color-difference meter (CR-400, from Konica Minolta Holdings, Inc.). The results are shown in Table 3. As the value of  $\Delta E_1$  is greater, the dying property becomes improved.

6. Evaluation for color fastness against shampoo

Next, the above each bundle was immersed into each aqueous 0.5 mass% of sodium POE (2) laurylether sulfate solution at a solution-hair ratio of 1:10 by mass. The bundle was placed in a thermostat at 30°C for 30 minutes while shaking it 60 times per minute. Thereafter, it was rinsed with warm water, subjected to conditioning treatment, and dried. Color difference  $\Delta E_2$  of each bundle before and after shampoo treatment was measured with the color-difference meter. The results are shown in Table 3. As the value of  $\Delta E_2$  is smaller, the color fastness against shampoo becomes improved.

Table 3

	Present invention	Comparative examples
First part	First part a	First part b
Second part	Second part a	Second part a
Dyeing property $\Delta E_1$	63.7	61.1
Color fastness against shampoo $\Delta E_2$	3.0	5.5

Table 1	(mass%)	
First part	First part a	First part b
Amino-modified silicone (amino equivalent: 1800 g/mol)	1.1	1.1
Highly polymerized methylpolysiloxane (number-average degree of polymerization: 2,700)	1.3	0
Dimethylpolysiloxane (number-average degree of polymerization: 550)	3.6	4.9
Dimethyldiallylammonium chloride • acrylic acid copolymer solution *1	2.0	2.0
Dimethyldiallylammonium chloride • acrylamide copolymer solution *2	2.0	2.0
Toluen-2,5-diamine	0.24	0.24
<i>p</i> -Aminophenol	0.74	0.74
<i>o</i> -Aminophenol	0.07	0.07
<i>m</i> -Aminophenol	0.18	0.18
<i>p</i> -Amino- <i>o</i> -cresol	0.10	0.10
Resorcin	0.28	0.28
Tetrasodium edetate dihydrate	0.2	0.2
Anhydrous sodium sulfite	0.5	0.5
Ascorbic acid	0.5	0.5
Propylene glycol	6.0	6.0
Cetanol	7.0	7.0
Polyoxyethylene (40) cetyl ether	2.0	2.0
Polyoxyethylene (2) cetyl ether	1.0	1.0
Stearyltrimethylammonium chloride	0.84	0.84
Octyldodecanol	1.0	1.0
Liquid paraffin	1.0	1.0
Strong aqueous ammonia (28%)	1.0	1.0
Monoethanolamine	3.5	3.5
Ammonium bicarbonate	0.3	0.3
Perfume	0.3	0.3
Purified water	Balance	Balance

\*1: Merquat 280 (40% aqueous solution, from Nalco company)

\*2: Merquat 550 (8.5% aqueous solution, from Nalco company)

Table 2	(mass%)
Second part	Second part a
Aqueous hydrogen peroxide (35%)	16.0
8-Quinolinol sulfate	0.04
Polyoxyethylene (40) cetyl ether	1.0
Polyoxyethylene (2) cetyl ether	1.0
Cetanol	3.5
Phosphoric acid (75%)	Adjusted to pH 3
Purified water	Balance

7. These experiments demonstrate that a hair dye composition comprising a highly polymerized silicone possesses superior color intensity and durability compared to a composition comprising only an amino-modified silicone.
8. Under penalty of perjury under the law of the United States of America.

*Hajime Miyabe*

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Hajime Miyabe

*October 23, 2007*

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Date